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(54) Title: ASSAY FOR ACETYLTRANSFERASES AND ACETYLTRANSFERASE SUBSTRATES

(57) Abstract: Methods of identifying an acetyltransferase substrate in a sample are provided. Also provided are methods of localizing acetylation of an acetyltransferase substrate in a cell. Additionally, methods of labeling a protein substrate of an acetyltransferase are provided, as are methods of assaying an acetyltransferase in a sample. Methods of quantifying acetyltransferase activity in a sample are further provided. Compositions provided include halo-acetyl-pantetheine, halo-acetyl-pantetheine with a label, and halo-acetyl-CoA with a label on the adenine of the CoA.